Academic Course Description

BHARATH UNIVERSITY
Faculty of Engineering and Technology
Department of Civil Engineering

BCE303 Building Construction Technology

Third Semester, 2017-18 (Odd Semester)

Course (catalog) description

To introduce students to various materials and methods commonly used in civil engineering construction and their properties. To give a detailed explanation of the test performed on the fresh concrete and the harden concrete. To give the vision of the basic to be followed in the construction site.

Compulsory/Elective course : Compulsory for Civil students

Credit /Contact hours : 3 credits / 45 hours

Course Coordinator : Mr.K.Venkatraman, Assistant Professor

Instructors :

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@ bharathuniv.ac.in	Consultation
Mr.K.Venkatraman	Second year Civil	Civil Block			9.00 - 9.50 AM
Ms.T.Arthi Harini	Second year Civil	Civil Block			12.45 - 1.15 PM

Relationship to other courses:

Pre –requisites : Basic Mechanical Engineering

Assumed knowledge : Basic knowledge in Building construction

Following courses : BECE051 Concrete Technology, BCE 701Estimation and Costing

Syllabus Contents

UNIT I PLANNING & PREFABRICATION 9 HOURS

Principles of Planning - regulations and byelaws, different codes of practice – Indian, American, & British codes of practice – Preparation of layouts – Orientation and marking of Buildings- details and sequence of construction – co-ordination – site clearance - Earthwork excavations – timbering – Dewatering Principles of prefabrication – Types – materials for prefabrication.

UNIT II TEMPORARY STRUCTURE & SHELL STRUCTURES 9 HOURS

Temporary shed - centering and shuttering – sheet piles, scaffoldings, shuttering forms – special forms for shells – slip form, moving form- shoring, and under pinning.

UNIT III PRESERVATIVES & SPECIAL MATERIALS 9 HOURS

Plastering - types – Paints – varnishes – distempers – wall cladding. Polymers (PVC Sheets, Pipes GFRP) ceramics & Clay Products - Refractory – Special Concrete - FRC, ferrocement& polymeric concrete – geotextiles.

UNIT IV BUILDING SERVICES **9 HOURS**

Electric Wiring – Water Supply – Drainage- Air Conditioning – Ventilation – ramps, Escalators, Lifts, Stairs. Water Proofing - Thermal Insulation - Termite proofing - Acoustic Treatment (Sound Conditioning) - Fire Protection - Intelligent Buildings

UNIT V CONSTRUCTION EQUIPMENTS **9 HOURS**

Selection of equipment for earth work, concreting, paving, pile erection- Material handling, hauling and erection of structures – Dewatering and pumping equipments.

TEXT BOOKS:

1. Arora S.P.and Bindra S.P. "Building Construction, Planning Techniques and Materials of Construction". DhanapatRai and Sons.
2. Sheety, M.S, Concrete Technology, Theory and Practice, S. Chand and Company Ltd, New Delhi, 2005.

REFERENCE:

1. Chudley R "Construction Technology", (Vol.I,II,III,&IV) ELBS / Longman (2nd Edition).
2. Jha J and Sinha S.K. "Construction and Foundation Engineering" Khanna Publishers, 1993.
3. Peurifoy R.L.,"Formwork for concrete structures", McGrew Hill Co., 1999

Computer usage: Nil

Professional component

General	-	0%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	0%
Professional subject	-	100%

Broad area : Building Construction

Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	August 1st week	Session 1 to 14	2 Periods
2	Cycle Test-2	September 2nd week	Session 15 to 28	2 Periods
3	Model Test	October 2nd week	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

Mapping of Instructional Objectives with Program Outcome

	Correlates to program outcome		
	H	**M**	**L**
1.Have a fundamental knowledge on the planning, different codes of practice, details and sequence of building construction	d	b,e,f,h,l,j	
2.Have knowledge on temporary structures such as scaffolding, underpinning and formwork structures in construction	a,d	c,e,f,i	
3.To know the types of the paint, Plastering, GFRP and geotextile	a,c,i	d,e,h,j	
4.To know about all the amenities to be provided in a building		b	A,e
5.Will acquire knowledge on handling of different types of construction equipments	c	a,e	d,h,l,j

Draft Lecture Schedule

S.NO	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT I PLANNING & PREFABRICATION			
1.	Principles of Planning - regulations and byelaws	No	T1/R1
2.	Different codes of practice Indian, American, & British codes of practice	No	
3.	Preparation of layouts	No	
4.	Orientation and marking of Buildings	No	
5.	Details and sequence of construction	No	
6.	co-ordination – site clearance	No	
7.	Earthwork excavations, timbering	No	
8.	Dewatering Principles of prefabrication	No	
9.	Types materials for prefabrication	No	
UNIT II TEMPORARY STRUCTURE & SHELL STRUCTURES			
10.	Temporary shed - centering and shuttering	No	T1/R1
11.	shuttering ,sheet piles	No	
12.	scaffoldings, shuttering forms	No	
13.	special forms for shells	No	
14.	special forms for shells	No	
15.	shoring, and under pinning	No	
16.	shoring, and under pinning	No	
17.	slip form ,moving form	No	
18.	shoring, and under pinning	No	
UNIT III PRESERVATIVES & SPECIAL MATERIALS			
19.	Plastering - types	No	T1/R1
20.	Paints – varnishes	No	
21.	distempers – wall cladding	No	
22.	Polymers (PVC Sheets, Pipes GFRP	No	
23.	ceramics & Clay Products	No	
24.	Refractory – Special Concrete	No	
25.	FRC, ferrocement	No	
26.	polymeric concrete	No	
27.	Geotextiles.	No	
UNIT IV BUILDING SERVICES			
28.	Electric Wiring ,Water Supply	No	T1/R1
29.	Drainage- Air Conditioning	No	
30.	Ventilation – ramps	No	
31.	Escalators, Lifts	No	
32.	Stairs, Water Proofing	No	
33.	Thermal Insulation	No	
34.	Termite proofing	No	
35.	Acoustic Treatment (Sound Conditioning)	No	
36.	Fire Protection - Intelligent Buildings	No	
UNIT V CONSTRUCTION EQUIPMENTS			
37.	Selection of equipment for earth work	No	T1/R1
38.	concreting, paving	No	
39.	Pile erection	No	
40.	Pile erection	No	
41.	Material handling	No	

42.	Material handling	No	
43.	Hauling and erection of structures	No	
44.	Dewatering equipments	No	
45.	pumping equipments	No	

Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and debugging skills.

Evaluation Strategies

Cycle Test – I	-	5%
Cycle Test – II	-	5%
Model Test	-	5%
Assignment	-	5%
Attendance	-	10%
Final exam	-	70%

Prepared by: Mr.S.Vinothkumar Assistant Professor , Department of Civil **Dated :**

ABET Outcomes expected of graduates of B.Tech / Civil/ program by the time that they graduate:

a. An ability to apply knowledge of mathematics, science, and engineering
b. An ability to design and conduct experiments, as well as to analyze and interpret data
c. An ability to design a hardware and software system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d. An ability to function on multidisciplinary teams
e. An ability to identify, formulate, and solve engineering problems
f. An understanding of professional and ethical responsibility
g. An ability to communicate effectively
h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i. A recognition of the need for, and an ability to engage in life-long learning
j. A knowledge of contemporary issues
k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Educational Objectives

PEO1: PREPARATION

Civil Engineering graduates will have knowledge to apply the fundamental principles for a successful profession and/or for higher education in Civil Engineering based on mathematical, scientific and engineering principles, to solve realistic and field problems that arise in engineering and non engineering sectors

PEO2: CORE COMPETENCE

Civil Engineering graduates will adapt to the modern engineering tools and construction methods for planning, design, execution and maintenance of works with sustainable development in their profession.

PEO3: PROFESSIONALISM

Civil Engineering Graduates will exhibit professionalism, ethical attitude, communication and managerial skills, successful team work in various private and government organizations both at the national and international level in their profession and adapt to current trends with lifelong learning.

PEO4: SKILL

Civil Engineering graduates will be trained for developing soft skills such as proficiency in many languages, technical communication, verbal, logical, analytical, comprehension, team building, inter personal relationship, group discussion and leadership skill to become a better professional.

PEO5: ETHICS

Civil Engineering graduates will be installed with ethical feeling, encouraged to make decisions that are safe and environmentally-responsible and also innovative for societal improvement.

Course Teacher	Signature
Mr.K.Venkatraman	
Ms.T.Arthi Harini	

Course Coordinator **HOD/Civil**